

Rhodora

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FLORA OF BIRCH ISLAND IN ATTEAN POND.

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ATTEAN POND is one of the Moose River chain of lakes, which extend from west to east across the northern part of Somerset County, Maine, and drain into the Kennebec by way of Moosehead Lake. It lies in Attean township, a wild-land township of upper Somerset, is in about latitude $45^{\circ} 35'$, and has an elevation at low water of 1157.5 feet. It is an irregular and shallow lake, about six miles in longest dimension, is very nearly surrounded by mountains, and contains forty-two islands of various sizes, all of which are encircled by, not to say constructed out of, granite boulders. Each island appears to have its backbone of granite boulders, glacier borne from Mt. Sally and other rocky heights to the north, while the sand and gravel of their beaches show the same origin. Birch Island, which is the largest, is very irregular in outline, with many projecting points and deep coves, and has an area of something over twenty-five acres.

The larger part of the body of the island is covered with a nearly pure stand of fir, unmixed except for the ancient white birches which rise at intervals, and lift their foliage entirely above the firs, thus forming a sort of second story of the forest. In this arboreal architecture it is evident that the second story was built before the first. The fir forest is replacing a former birch one. To an observer from the lake the island appears to be birch covered.

In the densest parts of the fir woods there is absolutely no vegetation underneath. In some parts, a little less dense, there is a scattered growth of *Aralia nudicaulis*, and in others of *Aralia* and *Ribes pros-*

tratum, while in more open places there may be found in addition seedlings of *Pyrus sitchensis*, *Acer spicatum* and *A. rubrum*. In drier parts of the woods the undergrowth sometimes consists exclusively of *Aralia nudicaulis* and *Vaccinium canadense*. At intervals one finds an enormous boulder with two or three young fir trees and a cherry or mountain maple growing precariously on its summit, and its slopes heavily hung with *Polypodium vulgare* and *Ribes prostratum*. At intervals also one comes to an open space thickly carpeted with *Taxus canadensis*. Along the trails or where the windfall of a giant birch has cut an open lane there grow a few kinds of forest ferns and flowers, such as bunchberry, star-flower, goldthread, wood sorrel, Clintonia, violets, twinflower, *Pyrola secunda*, two-leaved Solomon's seal, and the hay-scented and wood ferns. The most abundant is the twinflower, which throws a green drapery over decaying stumps and low rocks, and blossoms from June to September. Upon the points of the island, and in the neighborhood of the shore the fir of the woods is replaced by or mixed with red and white spruce and arbor vitae, and the undergrowth presents a larger variety.

There are two groups of tall white pines upon the highest ground of the island, and both gray and red pine are numerous near the shore.

The gray or Jack pine (*Pinus Banksiana*) is a picturesque feature of many of the islands of Attean, growing on the shore generally in groups and often very near the low water line. These trees seem to have a preference for the western or weather end of the islands, and are twisted by the winter storms into one-sided and fantastic shapes, thus presenting an appearance quite different from the columnar Norways with which they are commonly associated. The habit of growth of the two kinds of pine is also different, the individual Norways standing generally well-spaced from each other, while the Jacks are huddled in clusters together. On the Attean islands the Jack pines are nearly as tall as the Norways, growing on Birch Island fourteen to sixteen inches in diameter breast-high, and when not crippled in their upper limbs to a height of from fifty to sixty feet. The Jack pine is abundant enough to constitute a noticeable feature of the landscape on the shores of Holeb Pond, which lies in Holeb township, west of Attean. I am told by woodsmen that in Township No. 4, southeast from Attean, there is a large tract of the Jack pine, lying a mile or so from Moose River—about five hundred acres of predominating Jack pine with some mixture of Norway. Since the Jack is

not at present used for timber or pulp it is commonly cut for firewood for the log-haulers, as it dries out more quickly than hard wood. In a recent season five hundred cords of it were cut. In this same township, No. 4, there is another large section of burnt-over land, which has been naturally seeded and is growing up thickly with young Jacks.

Of deciduous trees on Birch Island, in addition to the ubiquitous paper birch, there is one group of three or four yellow birches. In the woods near the shore and on the shore grow poplars, both the large-toothed and the aspen, and red maple is abundant both on the shore and in open places in the woods. One aged elm maintains itself on a point of the island, and one large balsam poplar, surrounded by a few young ones, was found on the rocky shore. There are three apple-trees, probably of accidental human planting, growing on the cleared ground. Of the lesser trees, the mountain and the striped maple, the red cherry, and the mountain ashes, both *Pyrus americana* and *P. sitchensis*, are common in the woods. *Pyrus sitchensis* is the more common of the two and becomes often quite a large tree, one upon the island measuring ten inches in diameter breast-high, and over thirty feet in height. The black ash and the shad-bush are frequent on the shore, and the latter also in the woods. A few willows on the island, belonging to the species *Salix discolor* and *S. rostrata*, are large enough to deserve to be classed as lesser trees. This completes the island's silva.

In contrast with the general monotony of the woods the flora of the rocky shore is everywhere abundant and varied. The lake has tributary to it a large area of high precipitation, as a result of which the seasonal tide is six to eight feet in height, with a couple of feet more under occasional flood conditions. The period of high water lasts through the early summer, normal low water not generally being reached before the last of July. I have picked *Rhodora* in August from a bush low on the shore, recently out of the water, whose flowers and leaves were hurrying to maturity together. The tidal zone presents a border from ten to thirty feet in width around the shore of the island, the greater part of it covered with granite boulders, large and small, and thickly planted between the rocks with water-tolerant shrubs and trees. One here perceives why so many of our native shrubs are of the water-enduring kind. Since in the natural forest only the swamps and the borders of the lakes and streams are open enough for shrub growth, they learned perforce to live with

their feet in the water for a considerable part of the year. The soil of the rocky shore consists of a little gravel in the crevices between the rocks, which are kept well washed out, and there is not much herbaceous growth except *Osmunda regalis*, which unrolls its fronds at the edge of low water in July.

In October when the red maple is scarlet, the poplar and black ash golden, the dogwood and blueberry assorted shades of red and yellow, and the shad-bush a mixture of the two, the royal fern forms a cinnamon-colored edging at the water line around a large part of the island, as well as of many of the other islands of Attean. As one looks upon one of the small islands from a boat, one sees a border of royal fern and sweet gale at the water's edge, then dogwood and other low shrubs, then a continuous row of alder, above which arise the Jack pine and the white birch, the Jack occasionally stepping nearer the lake than any of the birches.

In the reentrant angles of the island, at the base of three of the larger coves, there are marshes of some size. Their soil consists of a layer two or three inches deep of muck over an underlying deposit of gravel. Much of their surface is dried out enough in August to be walked upon dry shod, but not for a sufficiently long time to permit the growth of any but strictly marsh plants. One of the marshes is filled for much of its area with big tussocks of *Carex stricta*, interspersed with *Spiraea latifolia* and *Salix pellita*, with an occasional bunch of *Calamagrostis*, and it runs out into the water with a border of *Scirpus cyperinus*. Another marsh contains uniform growth of *Osmunda regalis*, mixed with *Carex arcta*, and interspersed with *Alnus incana*, *Spiraea latifolia*, *Viburnum dentatum*, *Ilex verticillata*, *Myrica Gale*, *Cornus stolonifera*, *Salix pellita*, etc. Another marsh has a portion of it filled exclusively with *Osmunda regalis*, *Carex vesicaria* and *Salix pellita*. Along the shore edge of these last two marshes are narrow gravel beaches a little raised above the marsh, making a kind of bar. At the base of the smaller indentations of the shore are gravel beaches, some of which have behind them wet places containing a few marsh plants. These gravel beaches bear a few special plants of their own.

The larger coves with their shallow water and gravel bottoms are well filled with water weeds and other pond plants.

The cleared slope in front of the row of camps that extends along part of the ridge of the island affords a habitat for numerous field and

wayside plants, probably mostly of recent introduction from the south, while the waste ground back of the camps and round the chicken pens has been seized upon by some of the weeds that follow habitation.

The flora of Birch Island divides itself naturally into seven lists:

- I. The forest flora.
- II. Flora of the rocky shore below high water line.
- III. Flora of the marshes.
- IV. Flora of the gravel beaches.
- V. Water flora of the coves.
- VI. Flora of the cleared ground.
- VII. Waste ground flora.

These lists somewhat overlap. In a few cases I have placed the same name in two or more lists, where the plant seemed to have more than one natural station. The total number of species and varieties found on Birch Island is 255. Specimens of all plants mentioned have been examined and their names verified by Prof. M. L. Fernald of Gray Herbarium, Harvard University.

I. FOREST FLORA

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|---|---------------------------------------|
| <i>Polypodium vulgare</i> L. | <i>Taxus canadensis</i> Marsh. |
| <i>Phegopteris polypodioides</i> Fée. | <i>Pinus Strobus</i> L. |
| <i>P. Dryopteris</i> (L.) Fée. | <i>P. Banksiana</i> Lamb. |
| <i>Pteris aquilina</i> L. | <i>P. resinosa</i> Ait. |
| <i>Aspidium noveboracense</i> (L.) Sw. | <i>Picea canadensis</i> (Mill.) BSP. |
| <i>A. cristatum</i> (L.) Sw. | <i>P. rubra</i> (DuRoi) Dietr. |
| <i>A. spinulosum</i> (O. F. Müller) Sw. | <i>Abies balsamea</i> (L.) Mill. |
| <i>A. spinulosum</i> , var. <i>intermedium</i> (Muhl.) D. C. Eaton. | <i>Thuja occidentalis</i> L. |
| <i>Dicksonia punctilobula</i> (Michx.) Gray. | <i>Panicum boreale</i> Nash. |
| <i>Osmunda Claytoniana</i> L. | <i>Agrostis hyemalis</i> (Walt.) BSP. |
| <i>O. cinnamomea</i> L. | <i>A. perennans</i> (Walt.) Tuckerm. |
| <i>Botrychium ternatum</i> (Thunb.) Sw., var. <i>intermedium</i> D. C. Eaton. | <i>Poa nemoralis</i> L. |
| <i>Lycopodium lucidulum</i> Michx. | <i>Carex stellulata</i> Good. |
| <i>L. annotinum</i> L. | <i>C. rosea</i> Schuhr., |
| <i>L. clavatum</i> L. | var. <i>radiata</i> Dewey. |
| <i>L. obscurum</i> L. | <i>C. brunescens</i> Poir. |
| <i>L. complanatum</i> L., var. <i>flabelli-</i> <i>forme</i> Fernald. | <i>C. debilis</i> Michx., |
| | var. <i>Rudgei</i> Bailey. |
| | <i>C. intumescens</i> Rudge, |
| | var. <i>Fernaldii</i> Bailey. |
| | <i>Clintonia borealis</i> (Ait.) Raf. |
| | <i>Maianthemum canadense</i> Desf. |

Trillium erectum L.
T. undulatum Willd.
Salix discolor Muhl.
S. humilis Marsh.
Populus tremuloides Michx.
P. grandidentata Michx.
Betula lutea Michx. f.
B. alba L.,
 var. *papyrifera* (Marsh) Spach.
Ulmus americana L.
Coptis trifolia (L.) Salisb.
Ribes prostratum L'Hér.
Pyrus americana (Marsh.) DC.
P. sitchensis (Roem.) Piper.
Amelanchier laevis Wiegand.
Rubus triflorus Richards.
Prunus pennsylvanica L. f.
Oxalis Acetosella L.
Nemopanthus mucronata (L.) Trel.
Acer pennsylvanicum L.
A. spicatum Lam.
A. rubrum L.
Viola septentrionalis Greene.
V. blanda Willd.

V. incognita Brainerd,
 var. *Forbesii* Brainerd.
Aralia hispida Vent.
A. nudicaulis L.
Cornus canadensis L.
Chimaphila umbellata (L.) Nutt.
Pyrola secunda L.
P. elliptica Nutt.
Monotropa unifolia L.
Kalmia angustifolia L.
Vaccinium pennsylvanicum Lam.
V. canadense Kalm.
Trientalis americana (Pers.) Pursh.
Scutellaria lateriflora L.
Lycopus virginicus L.
Lonicera canadensis Marsh.
Linnaea borealis L.
Viburnum cassinoides L.
Sambucus racemosa L.
Aster macrophyllus L.
A. macrophyllus L.,
 var. *velutinus* Burgess.
A. umbellatus Mill.
A. acuminatus Michx.
Anaphalis margaritacea (L.) B. & H.

II. FLORA OF THE ROCKY SHORE.

Osmunda regalis L.
Pinus Banksiana Lamb.
Thuja occidentalis L.
Panicum boreale Nash.
Muhlenbergia racemosa (Michx.)
 BSP.
Smilax herbacea L.
Salix lucida Marsh.
S. cordata Muhl.
S. balsamifera Barratt.
S. discolor Muhl.
S. humilis Marsh.
S. sericea Marsh.
S. rostrata Richards.
S. humilis × *discolor*.
Populus tremuloides Michx.
P. balsamifera L.
Myrica Gale L.
Alnus mollis Fernald

A. incana (L.) Moench.
Thalictrum polygonum Muhl.
Spiraea latifolia Borkh.
Amelanchier laevis Wiegand.
Rosa blanda Ait.
Ilex verticillata (L.) Gray.
Nemopanthus mucronata (L.) Trel.
Acer rubrum L.
Cornus stolonifera Michx.
Rhododendron canadense (L.) BSP.
Kalmia angustifolia L.
Vaccinium canadense Kalm.
Fraxinus nigra Marsh.
Viburnum dentatum L.
V. cassinoides L.
Eupatorium purpureum L.,
 var. *foliosum* Fernald.
Aster vimineus Lam.

III. FLORA OF THE MARSHES.

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|---|--|
| Aspidium Thelypteris (L.) Sw. | Habenaria fimbriata (Ait.) R.Br. |
| Onoclea sensibilis L. | Salix lucida Muhl. |
| Osmunda regalis L. | S. petiolaris Sm. |
| Poa perennans (Walt.) BSP. | S. sericea Marsh. |
| Calamagrostis canadensis (Michx.) Beauv. | S. pellita Anders. |
| Glyceria borealis (Nash) Batchelder | S. sericea × petiolaris |
| Dulichium arundinaceum (L.) Brit- ton. | Myrica Gale L. |
| Scirpus cyperinus (L.) Kunth., var. pelius Fernald. | Alnus incana (L.) Moench. |
| S. pedicellatus Fernald. | Radicula palustris (L.) Moench. |
| S. atrocinctus Fernald. | Spiraea latifolia Borkh. |
| Carex arcta Boott. | Potentilla palustris (L.) Scop. |
| C. canescens L. | Ilex verticillata (L.) Gray. |
| C. crinita Lam. | Nemopanthus mucronata (L.) Trel. |
| C. torta Boott. | Hypericum boreale (Britton) Bick- nell. |
| C. stricta Lam. | H. virginicum L. |
| C. flava L. | Sium cicutaefolium Schrank. |
| C. vesicaria L. | Cornus stolonifera Michx. |
| C. vesicaria L., var. jejuna Fernald. | Vaccinium macrocarpon Ait. |
| C. vesicaria L., var. distenta Fries. | Lysimachia terrestris (L.) BSP. |
| C. rostrata Stokes. | Scutellaria galericulata L. |
| C. rostrata Stokes, var. utriculata (Boott.) Bailey. | Lycopus uniflorus Michx. |
| Juncus effusus L. | Mentha arvensis L. |
| Smilax herbacea L. | M. arvensis L., var. glabrata (Benth.) Fernald. |
| Iris versicolor L. | Veronica scutellata L. |
| | Galium trifidum L. |
| | G. Claytoni Michx. |
| | Viburnum dentatum L. |
| | V. cassinoides L. |

IV. FLORA OF THE GRAVEL BEACHES.

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| Equisetum arvense L. | J. subtilis Mey. |
| Sparganium diversifolium Graeb- ner., var. acaule (Beeby) Fernald & Eames. | Ranunculus Flammula L. var. reptans (L.) Mey. |
| Eleocharis acicularis (L.) R. & S. | Potentilla palustris (L.) Scop. |
| E. tenuis (Willd.) Schultes. | Hypericum ellipticum Hook. |
| Carex lenticularis Michx. | H. boreale (Britton) Bicknell. |
| C. Oederi Retz. | Sium cicutaefolium Schrank. |
| Juncus filiformis L. | Lysimachia terrestris (L.) BSP. |
| J. brevicaudatus (Engel.) Fernald. | Scutellaria lateriflora L. |
| J. pelocarpus Mey. | Lycopus uniflorus Michx. |
| | L. americanus Muhl. |

V. WATER FLORA OF THE COVES.

- Equisetum littorale* Kuehlewein.
Sparganium fluctuans (Morong) Robinson.
Potamogeton natans L.
P. epihydrus Raf.
P. amplifolius Tuckerm.
P. heterophyllus Schreb.
P. bupleuroides Fernald.
P. pusillus L.
P. dimorphus Raf.
P. Robinsii Oakes.
Najas flexilis (Willd.) Rostk. & Schmidt.
Sagittaria latifolia Willd.,
 forma *diversifolia* (Engelm.) Robinson.
Eleocharis palustris (L.) R. & S.
E. acicularis (L.) R. & S.
- Scirpus subterminalis* Torr.
S. cyperinus (L.) Kunth.
Eriocaulon articulatum (Huds.) Morong.
Nymphaea advena Ait.,
 var. *variegata* (Engelm.) Fernald.
Castalia odorata (Ait.) Woodville & Wood.
Ranunculus aquatilis L.,
 var. *capillaceus* DC.
Myriophyllum alterniflorum DC.
M. verticillatum L.,
 var. *pectinatum* Wallr.
M. Farwellii Morong.
Utricularia vulgaris L.,
 var. *americana* Gray.
Lobelia Dortmanna L.

VI. FLORA OF THE CLEARED GROUND

- Asplenium filix-femina* (L.) Bernh.
Anthoxanthum odoratum L.
Phleum pratense L.
Agrostis alba L.,
 var. *vulgare* (With.) Thurb.
A. alba L.,
 var. *maritima* (Lam.) G. F. W. Mey.
A. hyemalis (Walt.) BSP.
Danthonia spicata (L.) Beauv.
Poa annua L.
P. trifolia Gilib.
P. pratensis L.
Bromus ciliatus L.
Carex tribuloides Wahlenb.,
 var. *reducta* Bailey.
Carex Crawfordii Fernald.
Juncus bufonius L.
J. tenuis Willd.
Asparagus officinalis L.
Sisyrinchium angustifolium L.
Ranunculus acris L.
R. acris L.,
 var. *Steveni* (Andrs.) Lange.
- Pyrus Malus* L.
Fragaria virginiana Duchesne.
Rubus idaeus L.,
 var. *aculeatissimus* (C. A. Mey.) Regel & Tilling.
Trifolium pratense L.
T. repens L.
T. hybridum L.
T. agrarium L.
Oxalis corniculata L.
Epilobium angustifolium L.
E. adenocaulon Haussk.
Oenothera pumila L.
Carum Carui L.
Apocynum androsaemifolium L.
Prunella vulgaris L.
Plantago major.
Veronica serpyllifolia L.
Solidago canadensis L.
Erigeron philadelphicus L.
E. ramosus (Walt.) BSP.
Antennaria canadensis Greene.
Achillea Millefolium L.

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|---|-----------------------------|
| Chrysanthemum Leucanthemum L. var. pinnatifidum Lecoq & Lamotte. | Taraxacum officinale Weber. |
| Cirsium arvense (L.) Scop. | Lactuca canadensis L. |
| | Hieracium aurantiacum L. |
| | H. scabrum Michx. |

VII. WASTE GROUND FLORA

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| Echinochloa crusgalli (L.) Beauv. | Cerastium vulgatum L. |
| Setaria glauca (L.) Beauv. | Agrostemma Githago L. |
| S. viridis (L.) Beauv. | Lepidium virginicum L. |
| S. italica (L.) Beauv. | L. apetalum Willd. |
| Rumex obtusifolius L., | Capsella Bursa-pastoris (L.) Cosson. |
| R. Acetosella L. | Brassica juncea (L.) Cosson. |
| Polygonum aviculare L. | B. campestris L. |
| P. aviculare L., | Potentilla monspeliensis L. |
| var. vegetum Ledeb. | P. monspeliensis L., |
| P. lapathifolium L. | var. norvegica (L.) Rydb. |
| P. Persicaria L. | Vicia Cracca L. |
| P. Convolvulus L. | Galeopsis Tetrahit L. |
| Chenopodium album L. | Solanum rostratum Dunal. |
| C. album L., | Erigeron canadensis L. |
| var. viride (L.) Moq. | Gnaphalium uliginosum L. |
| Amaranthus retroflexus L. | Ambrosia artemisiifolia L. |
| Stellaria media (L.) Cyrill. | Anthemis Cotula L. |

A short list is added of plants which were found in Attean township, outside of Birch Island.

In the woods: *Equisetum sylvaticum* L., *Streptopus roseus* Michx., *Cypripedium acaule* Ait., *Acer saccharum* Marsh, *Viola incognita* Brainerd, *V. renifolia* Gray, *Circaea alpina* L., *Galium triflorum* Michx.

On a high knoll covered with Norway pine: *Spiranthes Romanzoffiana* Cham., *Epipactis tessellata* (Lodd.) A. A. Eaton, *Pyrola americana* Sweet, *Ledum groenlandicum* Oeder.

On the mountain: *Vaccinium pennsylvanicum* Lam., var. *nigrum* Wood, *V. pennsylvanicum* Lam., var. *myrtilloides* (Michx.) Fernald.

On burnt land: *Corydalis sempervirens* (L.) Pers.

In a bog: *Habenaria blephariglottis* (Willd.) Torr., *Calopogon pulchellus* (Sw.) R. Br., *Arethusa bulbosa* L.

On the rocks of a small island: *Potentilla tridentata* Ait.

On the shore of the mainland: *Crataegus macrosperma* Ashe, *Rhus typhina* L., *Aster radula* Ait.

In the pond: *Polygonum amphibium* L.

In Moose River: *Sagittaria arifolia* Nutt.

On the edge of a field: *Chelone glabra* L., *Senecio Robinsii* Oakes.

The following were found in No. 4, R. 7, just across the line from Attean.

On the muddy bank of Moose River: *Alopecurus geniculatus* L., var. *aristulatus* Torr., *Callitriche palustris* L., *Ilysanthes dubia* (L.) Barnh.

In Moose River: *Nymphaea microphylla* Pers.

In woods near the river: *Cinna latifolia* (Trev.) Griseb., *Solidago macrophylla* Pursh.

SKOWHEGAN, MAINE.

ANTENNARIA ALPINA AND A. CARPATHICA.

THEO. HOLM.

IN view of the fact *Antennaria alpina* (L.) R. Br. and *A. carpathica* (Wahlenb.) R. Br. are about to be excluded from the flora of this continent according to some authors of recent date, the writer wishes to call attention to some points relative to the geographical distribution and external structure of these species.

While both species were included by Asa Gray in his Synoptical Flora of North America, and by John Macoun in his Catalogue of Canadian Plants, with a range extending from Labrador throughout the northern part of the continent to Alaska and Oregon, Greene has expressed the opinion that *A. alpina* is not known to occur on our continent "unless perhaps a sheet of specimens in Canadian Survey collection, said to have been collected on the Arctic sea coast by Dr. Richardson, may represent it;"¹ and this author makes the following statement about *A. carpathica*: "I am still without evidence that true *A. carpathica* exists in North America" (l. c. p. 289). In Coulter & Nelson's New Manual of Botany of the Rocky Mountains (1919) twenty-one species of *Antennaria* are enumerated, but *A. alpina* and *A. carpathica* are excluded; finally in P. A. Rydberg's Flora of the Rocky Mountains and Adjacent Plains (1917) *A. carpathica* has been left out, and *A. alpina* is credited only to some of the British provinces.

However, if we combine the geographical distribution of both species in the Old World with that given by Gray and Macoun for this continent, we notice at once that *A. alpina* is circumpolar, and *A.*

¹ Greene, E. L., Pittonia Vol. III. Washington 1896-1898, p. 284.